

## PATENT COOPERATION TREATY

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# INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference P-13227	<b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/NO 03/00246	International filing date (day/month/year) 15.07.2003	Priority date (day/month/year) 15.07.2002
International Patent Classification (IPC) or both national classification and IPC B81B1/00		
Applicant OSMOTEX AS		

<p>1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 5 sheets, including this cover sheet.</p> <p><input checked="" type="checkbox"/> This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of a total of 38 sheets.</p>	
<p>3. This report contains indications relating to the following items:</p> <ul style="list-style-type: none"> <li>I <input checked="" type="checkbox"/> Basis of the opinion</li> <li>II <input type="checkbox"/> Priority</li> <li>III <input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</li> <li>IV <input type="checkbox"/> Lack of unity of invention</li> <li>V <input checked="" type="checkbox"/> Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</li> <li>VI <input type="checkbox"/> Certain documents cited</li> <li>VII <input type="checkbox"/> Certain defects in the international application</li> <li>VIII <input type="checkbox"/> Certain observations on the international application</li> </ul>	

Date of submission of the demand  11.02.2004	Date of completion of this report  01.10.2004
Name and mailing address of the International preliminary examining authority:   European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized Officer  Kusztelan, L Telephone No. +49 89 2399-2479



**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. PCT/NO 03/00246

**I. Basis of the report**

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

**Description, Pages**

1-32 received on 15.09.2004 with letter of 13.09.2004

**Claims, Numbers**

1-31 received on 15.09.2004 with letter of 13.09.2004

**Drawings, Sheets**

1/20-20/20 as published

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- the language of publication of the international application (under Rule 48.3(b)).
- the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- contained in the international application in written form.
- filed together with the international application in computer readable form.
- furnished subsequently to this Authority in written form.
- furnished subsequently to this Authority in computer readable form.
- The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- the description, pages:
- the claims, Nos.:
- the drawings, sheets:

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. PCT/NO 03/00246

5.  This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

*(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)*

6. Additional observations, if necessary:

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

**1. Statement**

Novelty (N)	Yes: Claims	1-31
	No: Claims	
Inventive step (IS)	Yes: Claims	1-31
	No: Claims	
Industrial applicability (IA)	Yes: Claims	1-31
	No: Claims	

**2. Citations and explanations**

**see separate sheet**

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/NO 03/00246

1. The applicant's request of the letter of 13.9.04, section 6 last par. is noted, cf. "all the objections ... have been properly repudiated" & attention is drawn to OJ 11/2001 pgs.539-542, inc. Section 13. Inasmuch that the amended claims of the application are sufficiently clear for a meaningful opinion to be formed on their novelty & inventive step, the requirement of clarity is not essential for preliminary examination purposes. Accordingly, also in view of the close deadline for establishment of the IPER, a further opportunity to respond to the clarity objections is not possible.

2. Reference is made to the following documents:

D1: US 2003 164 296 A1

D2: US-A-5985119

D3: DUKHIN S.S.: 'Electrokinetic phenomena of the second kind and their applications' ADVANCES IN COLLOID AND INTERFACE SCIENCES vol. 35, 1991, ELSEVIER SCIENCE PUBLISHERS B.V., AMSTERDAM, pages 173 - 196, XP002976010

D4: DUKHIN S.S. ET AL: 'Intensification of electrodialysis based on electroosmosis of the second kind' JOURNAL OF MEMBRANE SCIENCE vol. 79, 1993, ELSEVIER SCIENCE PUBLISHERS B.V., AMSTERDAM, pages 199 - 210, XP002974593

D5: MISHCHUK N.A.: 'Electro-osmosis of the second kind near the heterogeneous ion-exchange membrane' COLLOIDS AND SURFACES A: PHYSICOCHEMICAL AND ENGINEERING ASPECTS vol. 140, 1998, pages 75 - 89, XP002974594

D6: MISHCHUK N.A. ET AL: 'Electroosmosis of the second kind' COLLOIDS AND SURFACE A: PHYSICOCHEMICAL AND ENGINEERING ASPECTS vol. 95, 1995, UKRAINE, pages 119 - 131, XP002976009

2. The applicant's attention is drawn to R.64.3 & R.70.10 PCT in relation to D1. A translation of the priority document is not available and, for the purposes of the IPER, D1 does not require further consideration.

3. The invention as claimed in claim 1 concerns a microchannel actuator with an externally applied electric field and conducting means of certain dimension with corresponding separations, thereby optimising electroosmotic flow therein.

D2 does not disclose conducting means within the known microchannel actuator.

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/NO 03/00246

D3 & D4 consider flow around a single spherical granule  
D5 considers flow around flat portions of a membrane.

None of the documents concern specific separations of conducting elements and their separation from channel walls. Consequently the claimed subject-matter is new. Moreover there is no incentive for the skilled person to consider these and an inventive contribution is appreciated.

4. The application does not meet the requirements of Article 6 PCT, because the claims are not clear.
- 4.1 Amended claim 1 details a spacing between different conducting means and that between conducting means and the channel walls including " $0_{\text{achar}}$ " i.e. no spacing. Given the broad definition of the conducting means viz. "surface portion of said conducting means is curved or inclined wrt. the  $E_{\text{field}}$ " whereby the inclined portion(s) include 0 degrees (cf. amended claim 7) i.e. no inclination, an unambiguous distinguishing nature of the different conducting means is not apparent or, moreover, how flow would occur between conducting means of zero separation.

This objection may be removed by specifying the minimum separation between different conducting means, cf. present claim 2 and by cancelling or amending claim 7 (cf. claim 8).

- 4.2 The subject-matter of claims 11,14-18,20,21,25 although being dependent upon device claim 1 relate to methods of using the device and thus create doubt concerning the category of claim 1.

These objections may be removed by drafting corresponding method claims.

- 4.3 Dependent claims 24 & 31 relate to features not having a clear definition cf. "SCR" & "lab on a chip", thus should be amended having regard to the available disclosure.